If you are using a printed copy of this procedure, and not the on-screen version, then you MUST make sure the dates at the bottom of the printed copy and the on-screen version match.
The on-screen version of the Collider-Accelerator Department Procedure is the Official Version.
Hard copies of all signed, official, C-A Operating Procedures are kept on file in the C-A ESHQ Training Office, Bldg. 911A.

C-A OPERATIONS PROCEDURES MANUAL

2.22 Power Dip and Power Outage Response Procedure

Text Pages 2 through 5

Hand Processed Changes

HPC No.	Date	Page Nos.	Initials

Approved: ***Signature on File*** _____
Collider-Accelerator Department Chairman Date

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2.22 Power Dip and Power Outage Response Procedure

1. Purpose

1.1 The purpose of this procedure is to provide instructions to Operations Coordinators (OC) and Main Control Room (MCR) Operators,

1.1.1 when responding to power dips, before and after they occur,

1.1.2 when securing equipment when directed to do so by the C-A Department Chairman, or the Head of Operations,

1.1.3 when receiving a request to turn off during Operations involving a single user who is vulnerable to line voltage fluctuations, and

1.1.4 when experiencing a power outage or brownout due to either a BNL or a LIPA equipment failure.

1.2 The current C-A Department policy for power dips requires the Operations Coordinators to use their best judgement when deciding to continue operations or to turn off sensitive equipment when power dips are expected. IF a power dip occurs, THEN the OC's shall utilize their personal judgement and the tools provided (NEXRAD software in the MCR, and phone calls to the LIPA Systems Operator) in order to decide when to restore operations.

2. Responsibilities

2.1 The OC shall:

2.1.1 Inform the operators which devices to turn off or to turn on depending on the current situation,

2.1.2 Inform the appropriate groups when a power dip has occurred,

2.1.3 Phone the Water Systems Group first line supervisor, or designee, to determine the appropriate response for the Water Systems technicians.

3. Prerequisites

None

4. Precautions

None

5. Procedure

5.1 Responding to Power Dips

5.1.1 (Planned) if power dips associated with bad weather are anticipated, THEN

5.1.1.1 amass weather information by

5.1.1.1.1 using NEXRAD software at MCR center console (see the Long Term Orders for NEXRAD Operation for instructions),

5.1.1.1.2 phoning the BNL or National Weather Service on site, if appropriate, and

5.1.1.1.3 looking out the window.

5.1.1.2 Operations Coordinators shall use their judgement to decide whether to continue to operate when bad whether is anticipated.

5.1.2 (Unplanned) if power dips, due to bad weather or other causes have occurred, THEN

5.1.2.1 IF appropriate, contact LIPA operations to find out current and future power reliability status.

5.1.2.2 IF appropriate, use the NEXRAD software to verify that the Storms have passed and begin to restore all other systems and devices.

5.1.2.3 check the status of:

5.1.2.3.1 the Linac Source if appropriate

5.1.2.3.2 Cooling Systems

5.1.2.3.3 Vacuum Systems

5.1.2.3.4 Access Control Systems

5.1.2.3.5 Controls Systems

5.1.2.3.6 Pulsed Power Supplies

5.1.2.3.7 Any Experimental Area cryogenic liquid target or apparatus containing flammable gas.

5.1.2.3.8 UPS Systems

5.1.2.3.9 Emergency Diesel Generators

5.1.2.4 IF any of the systems in paragraph 5.1.2.3 are off, THEN restore them immediately.

5.1.2.5 During normal hours inform the appropriate personnel when these systems have been affected. During off-hours, contact personnel utilizing the call-in lists, when equipment cannot be restored by Operations Support personnel.

5.1.3 IF the program will be interrupted for 1.5 hours or more, THEN the OC shall instruct the Operator to do the following:

5.1.3.1 Turn the AMMPS system to SBY; turn off the exciter CB (52E); switch from cycloconverter to liquid rheostat. (Leaving motor on)
5.1.3.2 Turn the BMMPS system to SBY.
5.1.3.3 Inform experimenters to put their power supplies to standby.

5.2 Orders to turn off "sensitive systems"

5.2.1 IF instructed to turn off "sensitive systems" by the C-A Department Chairman, the Head of Operations, or other Department/Division level managers, or IF the complex is running for a single vulnerable experiment such as g-2, who decides to turn off to allow a storm to pass, THEN do the following:

5.2.1.1 Turn the AMMPS system to SBY; turn off the exciter CB (52E); switch from cycloconverter to liquid rheostat.
5.2.1.2 Turn the BMMPS system to SBY.
5.2.1.3 Have Operations support turn off the LINAC master High Voltage.
5.2.1.4 Inhibit the Booster and C-A RF voltage.
5.2.1.5 Turn off any fast pulsed power supplies such as the L20 septum, A5 and F3 kickers etc.

5.3 Power Outage

5.3.1 IF a power outage occurs due to either a BNL or a LIPA equipment failure, THEN do the following:

5.3.1.1 Verify the status of the PASS and C-A Access Control Systems.
5.3.1.1.1 IF one or both systems is compromised, THEN

5.3.1.1.1.1 Padlock gates to contamination areas
5.3.1.1.1.2 Verify that AGS Gate bolts are in the safe position
5.3.1.1.1.3 Prepare to re-sweep enclosures where doors are secured by "electric strike"
5.3.1.1.1.4 Contact the RSC Chairperson for advice

5.3.1.2 Contact Cryogenic Operations for Collider, building 919 (g-2), if appropriate, and C-A Cryogenic target watch and determine the status of their equipment.

5.3.1.3 IF the outage is greater than one minute, THEN check if the Emergency Diesel Generators have started and have assumed loads. (ie. Transfer switches have operated)

5.3.1.4 Assess which accelerator systems are affected and contact the appropriate support groups for assistance.

5.3.1.5 Contact LIPA operations or the BNL site supervisor to determine the source of the problem and the expected duration of the problem.

5.3.1.6 After the power has been restored and the line voltage is stable, THEN restore critical systems first, such as water cooling systems, the LINAC source, Access Control systems, Alarm systems, Vacuum systems, etc.

6. Documentation

None

7. References

None

8. Attachments

None